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10/730,974	12/10/2003	Takashi Toyofuku	Q78812	5118

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EXAMINER	
WASHINGTON, JAMARES	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/730,974	TOYOFUKU, TAKASHI	
	Examiner	Art Unit	
	Jamares Washington	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *09 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments and response received on October 9, 2007 have been entered. Claims 1-14 are currently pending with claims 7-14 having been added. Applicant's newly added claims and arguments for existing claims are addressed hereinbelow.

Claim Objections

2. Claim 11 is objected to because of the following informalities:

Claim 11 recites "...a CT gradation correction processing circuit for processing the continuous gradation image is processed". The sentence structure does not make sense in the ordinary usage of the terms presented within the sentence.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehud Spiegel (US 5615282) in combination with Masataka Hasegawa et al (US 6856410 Bl). Regarding claim 1, Spiegel discloses an image processing apparatus (Col. 4 lines 64-66) comprising:

an image reception section (Fig. 2 Input bus) which receives CT image data (Fig. 2 numeral 24 CT input buffer receives continuous tone image data from the input bus) consisting of bitmap data representing a continuous gradation image ("A preferred format for regions of the first type in which the color and tone vary continuously is pixel by pixel representation, such as "CT" (continuous tone) format" at column 1 line 37. Continuous tone images are described pixel-by-pixel in a bitmap.) and LW image data consisting of bitmap data representing a line drawing (One preferred format for regions of the second type in which the color and tone vary only between sub-regions is "LW" (line work) format, also known as "run length encoding" or "line art" at column 2 line 1. Fig. 2 numeral 22, LW Bit Map input buffer), in which the line drawing includes line, character, and graphics drawings (Although not expressly stated, LW files (line work files) incorporates high resolution data like line art images, text, or lines from drawings. - Secondary teaching "The TIFF/IT file format" L. Leurs 2001 pg. 4 of 5 The LW file);

an image synthesizing section which synthesizes the CT image data and the LW image data corrected by the gradation correction section (Fig..5 numeral 36 Merger. "A merging unit 36, described in detail hereinbelow with reference to FIG. 6, "opens" the LW data received from LW buffer 34 for the line currently being processed and assigns a color value to each pixel. The

color value is determined by the transparency indication of the corresponding LW pixel. If the LW pixel is indicated to be transparent to CT, the CT value, arriving from scaler 32, is assigned to the pixel. Otherwise, the LW value is assigned to the pixel" at column 36 line 55), whereby generating image data representing an image including both a continuous gradation image region and a line drawing region ("The output of merger 36 is, therefore, a valid (i.e. non-"garbage") but not necessarily optimal representation of the entirety of the color image" at column 36 line 62); and

an image transmission section (The aforementioned described apparatus is obviously computer implemented and therefore carries out transmission functions through software execution.), which sends the image data generated by the image synthesizing section (Fig. 5 numeral 36 Merger) to a printer ("The color module 1014 outputs to the output module 1016 which typically comprises an output buffer 1054, a screening unit 1056 and a plotter interface unit 1058" at column 83 line 18. The plotter interface unit suggests a printer).

Spiegel fails to disclose a gradation correction section, which performs gradation correction processing so as to correct the CT image data, and the LW image data received by the image reception section, independently of each other.

However Hasegawa, in the same field of endeavor of image processing of two different types of image data to effectively generate a better quality image ("... the object of the present invention is to clear a preparing method of the digital print by which the print can be conducted in the harmonized condition of the character information and the image information, and the apparatus for the method" at column 3 line 56, Hasegawa), discloses a gradation correction section (Fig. 1 LUT (left) and LUT (right). Look up tables are used to correct gradations in

images. "In the gradation correction method in the above-described conventional color image output apparatus 1, because the correction (modification) of the gradation characteristic (input output corresponding relationship) of one dimensional LUTs 2-4 is conducted by trial and error, according to the correction of one dimensional LUTs 2-4 corresponding to the above difference, one dimensional LUTs 2-4 after correction is used" at column 3 line 17) which performs gradation correction processing (Software implemented by way of the gradation Look Up Tables) so as to correct the CT image data (Fig. 1 LUT (right) for image information.) and the LW image data (Fig. 1 LUT (left) received by the image reception section, independently of each other (Shown in Fig. 2 "...the character data and the image data are separated from the data of the image prepared in FIG. 2, and processed by using respective LUTs" at column 10 line 38);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Hasegawa of providing respective Look Up Tables for gradation correction of the image data (continuous tone and line work image data) processed by the apparatus as disclosed by Spiegel to better obtain the desired colors of the respective regions. "When the character data and the image data are converted by the single LUT, in the print, there is a case where disharmony is generated in a character portion and an image portion. For example, specifically for a fine line, MTF is lowered, the density is decreased, or because the short time exposure characteristic and MTF (gradation) are different depending on the color, the color balance is changed, and therefore, when the print of the character image is conducted by the LUT for general image use, there is a problem that the desired color is hardly obtained" at column 1 line 31, Hasegawa.

Regarding claim 2, the Spiegel-Hasegawa combination discloses an image processing apparatus according to claim 1, wherein the gradation correction section comprises a correction lookup table for CT image (as rejected in claim 1 above) and a correction lookup table for LW image (as rejected in claim 1 above), each of which describes association of data before correction and data after correction (Fig. 9 Example 1: Gradation look up tables are constructed from input and output image values by design.), and wherein the gradation correction section subjects the CT image data received by the image reception section to the gradation correction processing (Implemented through computer-based software consulting the CT look up table rejected in claim 1 above) and subjects the LW image data received by the image reception section to the gradation correction processing (Implemented through software consulting the LW look up table rejected in claim 1 above), by referring to the correction lookup table for CT image and the correction lookup table for LW image respectively (The idea of referring to the lookup tables to correct gradation of the respective image data is implied throughout the reference as gradation correction is performed in this manner and previously described in the rejection of claim 1 above).

Regarding claim 7, Spiegel in view of Hasegawa discloses an image processing apparatus according to claim 1, wherein the gradation correction section comprises a correction lookup table for CT image and subjects the CT image data received by the image reception section to the gradation correction processing by referring to the correction lookup table for CT image, whereby generating the corrected CT image data (see rejection of claim 1).

Regarding claim 8, Spiegel in view of Hasegawa discloses an image processing apparatus according to claim 1, wherein the gradation correction section comprises a correction lookup table for LW image and subjects the LW image data received by the image reception section to the gradation correction processing by referring to the correction lookup table for LW image, whereby generating the corrected LW image data (see rejection of claim 1).

Claims 3, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spiegel-Hasegawa as rejected in claim 2 above in combination with Masahiro Suzuki (US 7034964 B2).

Regarding claim 3, the Spiegel-Hasegawa combination discloses an image processing apparatus as rejected in claim 2 above.

The Spiegel-Hasegawa combination fails to disclose the gradation correction section adding a random number to data obtained by referring to the correction lookup table for CT image, to thereby generate CT image data after correction with respect to the CT image data received by the image reception section, and also adds a random number to data obtained by referring to the correction lookup table for LW image, to thereby generate LW image data after correction with respect to the LW image data received by the image reception section.

However, Suzuki teaches, in the same field of endeavor of gradation correction image processing methods, adding a random number to data obtained ("...there is provided a method for gradation reproduction.., the gradation reproduction method comprising determining the interval between the threshold values so that the amplitude of the corrected data according to rising and

falling variations in the corrected error spikes outward beyond the threshold values at least at a halftone gradation between a darkest gradation and a lightest gradation.., whereby generation of a transient region is prevented where the amplitude of the corrected data becomes excessively small at the halftone gradation of the corrected data, and wherein pseudo-random numbers are added to the input image data" at column 4 line 18) by referring to the correction lookup table C... the method for gradation reproduction... according to the present invention determines the threshold values according to the gradation of the input image data by referring to a threshold value look-up table .... and the look-up table determines the threshold values according to the gradation of the input image data" at column 4 line 49) for CT image data C... gradation reproduction of continuous tone images..." at column 4 line 8), to thereby generate CT image data after correction with respect to the CT image data received by the image reception section C...an error between a data item before multivaluing and the corresponding multivalued data item is spread, as a corrected error, under spreading conditions determined by weight coefficients, to a plurality of subsequent data items successively input to obtain corrected data, and the corrected data is multivalued, the gradation reproduction method comprising determining the interval between the threshold values so that the amplitude of the corrected data according to rising and falling variations in the corrected error spikes outward beyond the threshold values at least at a halftone gradation between a darkest gradation and a lightest gradation..." at column 4 line 24) and also adds a random number to data obtained by referring to the correction lookup table for LW image (Although not expressly stated, it would have been obvious to incorporate the teachings of Suzuki for Line Work image data and would not deviate from the scope of the

invention to effect the same results as taught above for the continuous tone image data), to thereby generate LW image data after correction with respect to the LW image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Suzuki of adding a random number to the continuous tone and line work image data in the lookup tables of the apparatus as disclosed by the Spiegel-Hasegawa combination because "according to the continuous tone image gradation reproduction method of the invention, the interval between the threshold values is determined so as to prevent generation of a transient region where the amplitude of the corrected data becomes excessively small at the halftone gradation of the corrected data. Therefore, the interval between the threshold values can be reliably selected so as to ensure continuity of gradation" (at column 17 line 36, Suzuki). This would prevent large jumps in neighboring gradation values and improved gradation expression can be realized.

Regarding claim 9, discloses an image processing apparatus according to claim 2, wherein the gradation correction section adds a random number to data obtained by referring to the correction lookup table for CT image, to thereby generate CT image data after correction with respect to the CT image data received by the image reception section (see rejection of claim 3).

Regarding claim 10, discloses an image processing apparatus according to claim 2, wherein the gradation section adds a random number to data obtained by referring to the

correction lookup table for LW image, to thereby generate LW image data after correction with respect to the LW image data received by the image reception section (see rejection of claim 3).

5. Claims 4-6, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spiegel-Hasegawa-Suzuki in combination with well-known principles in the art of image processing.

Regarding claim 4, the Spiegel-Hasegawa-Suzuki combination discloses the image processing apparatus as rejected in claim 1 above.

Hasegawa fails to teach an image processing program storage medium storing an image processing program executed in an information processing apparatus.

However, it is clear from the disclosure of the reference that the processing method is carried out by an image processing apparatus. It is well known in the image processing arts that a computer implemented method performed by an apparatus must receive "instructions" from an image-processing program residing on a computer readable "storage" medium in order for the apparatus to be operational. (Official Notice)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a computer readable storage medium which stores an image processing program for performing the above method, in the invention disclosed by the Spiegel-Hasegawa-Suzuki combination, to make the apparatus operational.

Regarding claim 5, the Spiegel-Hasegawa-Suzuki combination discloses the image processing program storage medium as rejected in claims 2 and 4 above.

Regarding claim 6, the Spiegel-Hasegawa-Suzuki combination discloses the image processing program storage medium storing an image processing program as rejected in claims 3 and 5 above.

Regarding claim 11, Spiegel in view of Hasegawa discloses an image processing apparatus according to claim 1.

The Spiegel-Hasegawa combination fails to teach a CT gradation correction processing circuit for processing the continuous gradation image is processed.

However, it is clear from the disclosure of the reference that the processing method is carried out by an image processing apparatus which utilizes look up tables to implement gradation correction. It is well known in the image processing arts that a computer implemented method performed by an apparatus uses circuitry to implement methods within the apparatus. (Official Notice).

There must exist a CT gradation correction processing circuit to implement the gradation correction of CT image data as disclosed in claim 1 above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a CT gradation correction processing circuit in the invention disclosed by the Spiegel-Hasegawa combination for the implementation of gradation correction for CT image data.

Regarding claim 12, Spiegel in view of Hasegawa discloses an image processing apparatus according to claim 1.

The Spiegel-Hasegawa combination fails to disclose an LW gradation correction processing circuit for processing the line drawings in which the line, the character and the graphics drawings are processed together (see argument as to line, character and graphics drawings processed together due to identical image structure).

However, it is clear from the disclosure of the reference that the processing method is carried out by an image processing apparatus which utilizes look up tables to implement gradation correction. It is well known in the image processing arts that a computer implemented method performed by an apparatus uses circuitry to implement methods within the apparatus. (Official Notice).

There must exist an LW gradation correction processing circuit to implement the gradation correction of LW image data as disclosed in claim 1 above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an LW gradation correction processing circuit in the invention disclosed by the Spiegel-Hasegawa combination for the implementation of gradation correction for line, character, and graphics data processed together.

Regarding claim 13, Spiegel discloses an image processing apparatus according to claim 11,

wherein the CT image data represents an image in a region of the continuation gradation

image (Col. 1 lines 37-41, Spiegel).

Regarding claim 14, Spiegel discloses an image processing apparatus according to claim 12,

wherein the LW image data represents an image in a region of the line drawings (Col. 2 lines 1-4, Spiegel).

Response to Arguments

6. Applicant's arguments filed October 9, 2007 have been fully considered but they are not persuasive.

Applicant's remarks: Regarding the argument that Hasegawa does not disclose a gradation correction section which performs gradation correction processing so as to correct the CT image data and **the LW image data** received by the image reception section, independently of each other and allegedly does not disclose **LW image data** being processed using its respective LUT. Applicant asserts that Fig. 1 clearly illustrates that character information is fed into the left LUT and not LW image data which includes line, character and graphics drawings.

Examiner's response: The usage of the phrase "LW image data" which includes line, character and graphics drawings merely establishes the fact that the image data is simply "run length encoded data" as opposed to continuous tone or contone image data. This means the color and

tone vary only between subregions which indicates sequences of identical pixels along a particular row of the color image are not stored one by one but rather as a single data element, the data element comprising a first field ("color index") indicating the tone and color characteristics of each of the identical pixels and a second field ("run length") indicating the number of identical pixels in the sequence (Col. 2 lines 1-10, Spiegel). Characters, along with lines and graphics drawings (as taught by "The TIFF/IT file format" L. Leurs 2001 pg. 4 of 5 The LW file and explained in claim 1 above) are all representative of "LW image data". The image data would undergo identical gradation correction processing because the image data has identical color structure characteristics. Hasegawa, as admitted by applicant, teaches gradation correction of characters and therefore teaches gradation of "LW image data" because of the color structure characteristics of such data. Therefore, Hasegawa discloses a gradation correction section which performs gradation correction processing so as to correct the CT image data and **the LW image data** received by the image reception section, independently of each other and discloses **LW image data** being processed using its respective LUT.

Applicant's remarks: Regarding the argument that rather than treating CT and LW independently Spiegel teaches away from claim 1 and thus also teaches away from any purported independent processing taught in Hasegawa because the spatial processing unit 14 converts the LW image data into CT image data and a selector 90 selects a value between the opened LW image data or scaled CT image as an output data.

Examiner's response: As shown in Fig. 1 of Spiegel, the color processing (numeral 12), of which gradation correction is correlated, is established before the spatial processing (numeral 14), of which the merging of the data actually takes place. This negates the assertion that the LW image data is "converted" to CT image data and therefore teaches away from processing the respective data independently. Combining Hasegawa with Spiegel would simply mean the respective LUTs implementing gradation correction for the LW and CT image data as taught by Hasegawa would occur at a time preceding that of the conversion and selection of image data as taught by Spiegel. Therefore, Spiegel in view of Hasegawa teaches treating CT and LW independently in terms of color (gradation correction) processing and therefore teaches the claimed invention.

Applicant's remarks: Regarding the argument that it would not have been obvious for one of ordinary skill in the art to modify the teachings of Spiegel with the teachings of Hasegawa because Spiegel discloses converting and merging plurality of image representation formats in to a single image representation format while Hasegawa disclose separating the character data and image data from the data of the image and processing them using **two different LUTs**.

Examiner's response: As previously stated in the response above, color processing occurs prior to the image data reaching the "merger", which simply teaches combining differing image data/formats to form a unified image, and therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Spiegel and

Hasegawa because the image data is still "separated" when undergoing color (gradation correction) processing.

*Note: Claims 2 and 3 depend from claim 1. Therefore, examiner maintains previous grounds for rejection.

Claims 4-6 recite subject matter analogous to claims 1-3 and are therefore unpatentable over the prior art of reference for at least the same reasons claims 1-3 are shown unpatentable.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamares Washington whose telephone number is (571) 270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jamares Washington
Junior Examiner
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KING Y. POON
SUPERVISORY PATENT EXAMINER

JW

December 5, 2007